



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P005272-PCT	FOR FURTHER ACTION		See Form PCT/PEA416
International application No. PCT/BR2004/000114	International filing date (day/month/year) 14.07.2004	Priority date (day/month/year) 15.07.2003	
International Patent Classification (IPC) or national classification and IPC H02P23/00, H02P27/00, H01R9/24			
Applicant EMPRESA BRASILEIRA DE COMPRESSORES S.A. - EMBRACO			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau; a total of 20 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 16.05.2005		Date of completion of this report 10.01.2006	
Name and mailing address of the International preliminary examining authority:  European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 240		Authorized Officer Roy, C Telephone No. +49 30 25901-673 	

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International application No.
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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-3 as originally filed
4-16 received on 16.05.2005 with letter of 16.05.2005

Claims, Numbers

1-26 received on 16.05.2005 with letter of 16.05.2005

Drawings, Sheets

15-55 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-9,11-16,24-26
	No: Claims	10,17-23
Inventive step (IS)	Yes: Claims	1-9,11-16
	No: Claims	10,17-26
Industrial applicability (IA)	Yes: Claims	1-26
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US-A-5 325 037 (JEONG JAE H) 28 June 1994

D2: EP-A-0 312 686 (GULTON IND INC) 26 April 1989

D3: US-A-5 450 521 (R W REDLICH) 12 September 1995

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 10, and 17-23 is not new in the sense of Article 33(2) PCT and because the subject-matter of claims 24-26 does not involve an inventive step in the sense of Article 33(3) PCT.

V.1 The document D1 discloses a method/system comprising :

- a motor (s. fig. 3, BM2), fed by a total voltage (VC) controlled by an electronic control central (4), the total voltage being proportional to a network voltage,
- the electronic control central comprises a voltage detection circuit (s. fig. 4) detecting the network voltage, comprising a first detection circuit (s. fig. 4, OP1) and a second detection circuit (s. fig. 4, TR1);
- the electronic control central making a first and second network voltage measurement at a first and a second moments of measurement, the two moments of measurements being different, and at a first and a second voltage network level (s. fig. 5, zero cross + reference voltage);
- the second voltage detection circuit (TR1) being a comparison circuit generating a square wave having a transition moment when the second level of voltage has been reached is generated (see fig. 5 curves (c) and (d) and fig. 4, col. 4, l. 58-68);
- the electronic control central calculates the value of the network voltage measured in function of the measurement time being the lag time between the first and second moments of measurement (see fig. 5: T1, T2 and T3) and obtains a value of a proportional network voltage (measured voltage), compares the lag time with a pre-established time (T2) and alters the value of the total voltage proportionally to the value of the proportional network voltage (s. col. 5, l. 20-22).

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Moreover the voltage detecting circuit (9) measures the network voltage at established first (zero crossing) and second (reference voltage, s. fig. 5) levels of voltage and the electronic control central includes a time counting device (microprocessor) that compares the lag time (T1, T2, T3) with a pre-established time (T2) and alters the total voltage proportionally, wherein the total voltage is increased when the lag time is longer than the pre-established time and the total voltage is decreased when the lag time is shorter than the pre-established time (T2)

V.2 The subject-matter of claim 1 differs from the method of D1 in that the total voltage is altered in function of the difference between the value of a proportional network voltage calculated in a present cycle of the network voltage and the value of the proportional network voltage *calculated in the previous cycle* of the network voltage.

This feature is neither known nor rendered obvious from any available prior-art and solves the problem of providing an alternative solution to the solution of D1 where the total voltage is altered in function of a difference between a calculated value and a constant predetermined value (T2).

Thus the subject-matter of claim 1 is new and inventive in the sense of Article 33(2) and (3) PCT.

V.3 Since all features of claims 10 and 17-23 are known from D1 (see item V.1.1 above), the subject-matter of claim 10 and of claims 17-23 is not new.

V.4 Since claims 11 and 12 contains the characterizing feature of claim 1 (see item V.2 above) or a corresponding feature, the subject-matter of claims 11 and 12 is new and involves an inventive step in the sense of Article 33(3) PCT.

V.5 When looking for a solution for providing a constant energy amount to the compressor of D3 despite fluctuations in the AC voltage the person skilled in the art would contemplate the possibility of implementing the teaching of D1 and he would then arrive to a system according to claims 24-26 without exercise of inventive skill.

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Thus the subject-matter of claims 24-26 does not involve an inventive step in the sense of Article 33(3) PCT.

Re Item VIII**Certain observations on the international application**

VIII.1 Although claims 1 and 10 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought and in respect of the terminology used for the features of that subject-matter. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

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